



Researcher-driven campaigns engage *Nature's Notebook* participants in scientific data collection

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PPSR benefits participants, science & management



citizenscienceleague.com



Multi-taxa, National-scale

- appropriate for scientists and non-scientists
- offers rigorous protocols, data management and archive, visualization, access
- Data collection mechanism



TRACKING
Seasonal **CHANGES**
IN PLANTS AND ANIMALS



Juniper Pollen Project



Project Overview

- Model juniper pollen spread in near real-time, inform public health
- **USA-NPN's role:** engage *Nature's Notebook* participants in tracking juniper phenology





Juniper Pollen Project



What USA-NPN provided:

- Observation protocols
- Data management, archive, visualization, and access
- Mechanisms to engage potential observers
 - Project advertised on USA-NPN website
 - Invitations and updates via newsletter



Juniper Pollen Project



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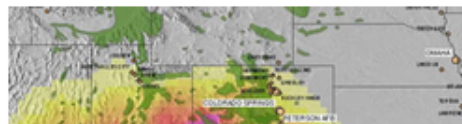
Juniper Pollen Project

PROJECT GOALS

The purpose of this effort is to model pollen release and concentrations. Improved models will:

- support public health decisions for asthma and allergy alerts in New Mexico, Texas and Oklahoma
- augment the Centers for Disease Control and Prevention's Environmental Public Health Tracking Network
- extend surveillance services to local healthcare providers subscribing to the Syndrome Reporting Information System (SYRIS)

The real-time models will be based on weather data and satellite information and be verified by on-the-ground observations. The

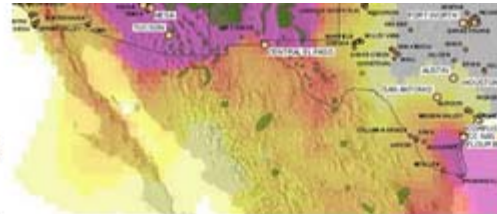


www.nn.usanpn.org/jpp

Juniper Pollen Project

JOIN US! IF YOU WOULD LIKE TO PARTICIPATE...

We need observers to track the timing of pollen production and release in junipers. You can join this effort by periodically checking individual juniper trees in your area for pollen cone development and reporting your observations via the USA-NPN web page.



HOW TO PARTICIPATE...

1. Select your plants - Identify one or more individual juniper plants to track. We are tracking four juniper species for this effort:

- Pinchot's juniper (*Juniperus pinchotii*)
- Rocky Mountain juniper (*Juniperus scopulorum*)
- oneseed juniper (*Juniperus monosperma*)
- Ashe's juniper (*Juniperus ashei*)

The pages for these species include information on how to identify them and how to monitor them.

2. Sign up as a USA-NPN observer - Become an official participant with Nature's Notebook and set your username and password. All you need is an email address and Internet access. When you are registering, identify yourself as a part of this effort by selecting 'Juniper Pollen Project' from the 'Partner Organization' drop-down menu.

3. Take observations - We invite you to track several phenophases of your juniper, including:



Juniper Pollen Project

PHENOPHASE	DESCRIPTION	PHOTO (CLICK TO ENLARGE)
Pollen cones	One or more fresh, male pollen cones (strobili) are visible on the plant. Cones have overlapping scales that are initially tightly closed, then spread apart to open the cone and release pollen. Include cones that are unopened or open, but do not include wilted or dried cones that have already released all of their pollen.	
Open pollen cones	One or more open, fresh, male pollen cones (strobili) are visible on the plant. Cones are considered "open" when the scales have spread apart to release pollen. Do not include wilted or dried cones that have already released all of their pollen.	
Pollen release	One or more male cones (strobili) on the plant release visible pollen grains when gently shaken or blown into your palm or onto a dark surface.	
Unripe seed cones	One or more unripe, female seed cones are visible on the plant. <i>See individual species profiles for more details.</i>	
Ripe seed cones	One or more ripe, female seed cones are visible on the plant. <i>See individual species profiles for more details.</i>	

4. Report your observations - As you collect data during the season, log in to your Nature's Notebook account and enter the observation data you recorded.



Special focus on junipers this spring!



Support allergy predictions by tracking pollen release in your juniper trees

A special request for Nature's Notebook participants in TX, OK, NM, UT, and AZ



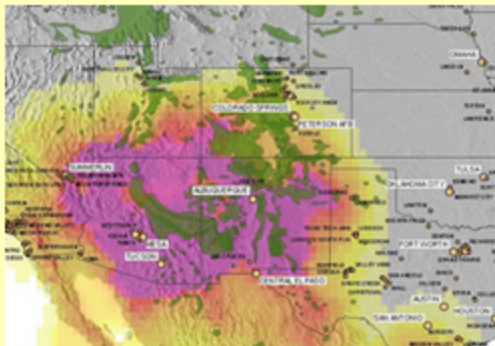
Greetings!

Please be sure to record the **absence** of pollen and cones, by marking **no**, as well as marking **yes** when you see pollen and cones. The **nos** help us zero in on when pollen release begins in your neighborhood.

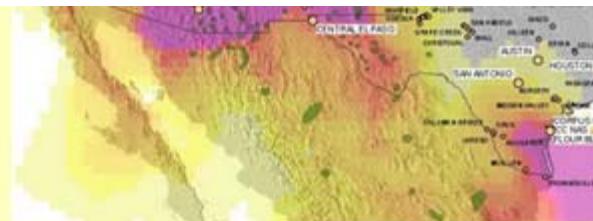
The [Juniper Pollen Project](#) is a collaborative effort to better predict outbreaks of juniper pollen, which can be very troublesome for allergy and asthma sufferers. We are encouraging residents of AZ, NM, TX, OK, CO, and UT to track the development and release of juniper pollen as a part of this effort. **Many thanks** to all of you who have already submitted your juniper observations!



In March and April, pollen release occurs in both oneseed juniper ([Juniperus monosperma](#)) and Rocky Mountain juniper ([Juniperus scopulorum](#)). The map below is a prediction of juniper pollen release and spread for March, 2013.



Example JPP Newsletter



Can you help the scientists that created this map determine how well their predictions represent what's happening on the ground? **Any observations you can provide on junipers in your area are useful for this effort!**

How to get started (if you haven't already):

1. Identify one or more juniper plants to monitor (below).
 - Pinchot's juniper ([Juniperus pinchotii](#))
 - Rocky Mountain juniper ([Juniperus scopulorum](#))
 - oneseed juniper ([Juniperus monosperma](#))
 - Ashe's juniper ([Juniperus ashei](#))
2. Watch them carefully and make observations on pollen cones, pollen release, and seed cone development.
3. Submit your observations to [Nature's Notebook](#).

More information on this project and how to participate can be found on the [Juniper Pollen Project](#) page.

Thank you for contributing directly to scientific discovery!
Your participation is truly appreciated.

Sent March 20, 2013



Juniper Pollen Project

Project outcomes

- 56 observation sites in 5 states
- >10,500 records of juniper pollen phenology (2010-2013)
- Team members are using observations to validate satellite data



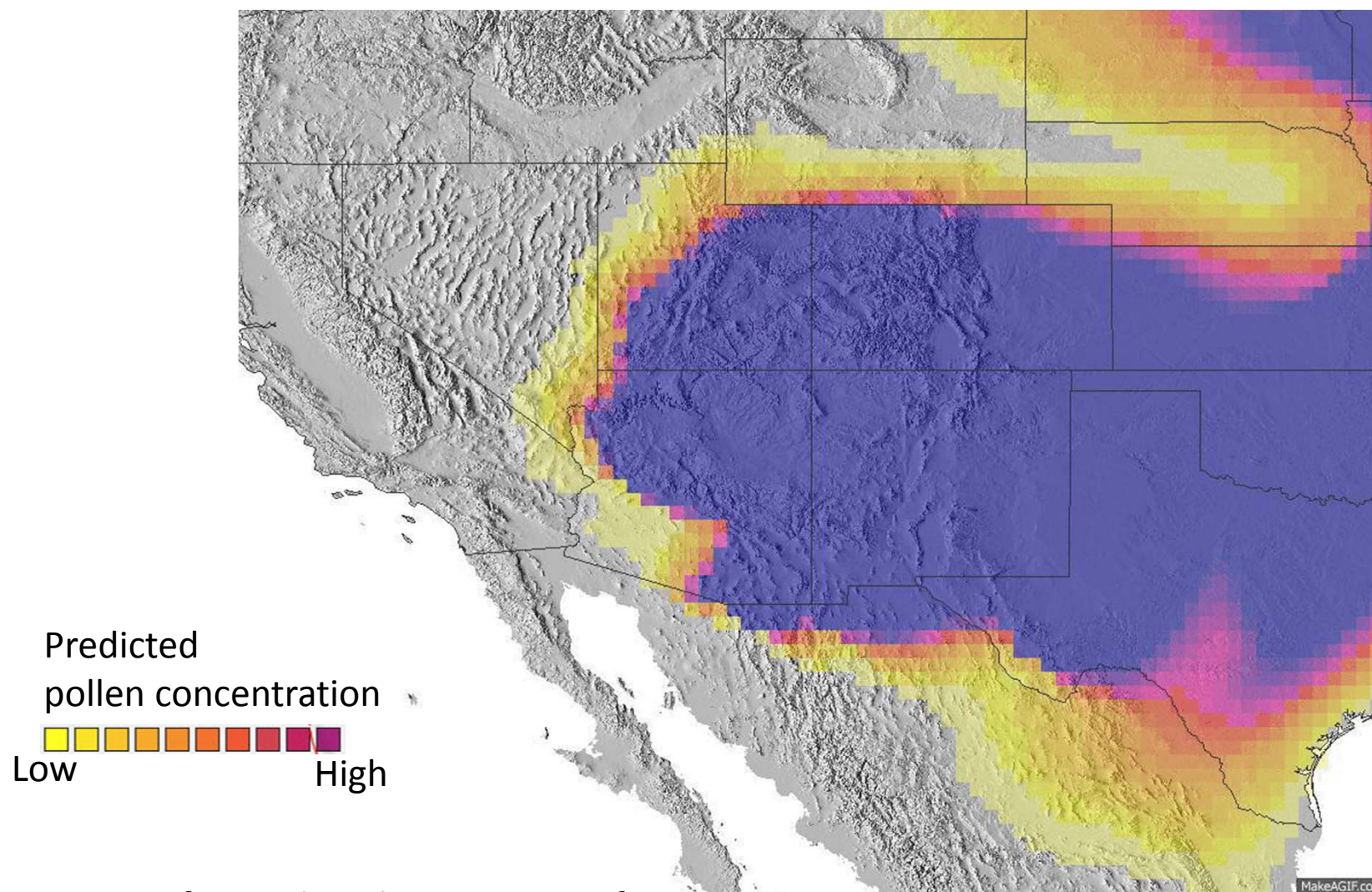


PREAM Model Output

USA npn
National Phenology Network
Taking the Pulse of Our Planet

USGS
science for a changing world

April 15 – May 6, 2013



Courtesy of B. Hudspeth, University of New Mexico

Collaboration between UMCES & USA-NPN

Project overview

- An effort to identify areas where *Populus* spp. are most and least adapted to climate change
- Methods involve evaluating green-up/down and genetic sampling



University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE



What USA-NPN is providing

- Observation protocols
- Data management, archive, visualization, and access
- Mechanisms to engage potential observers
- Coordination with other phenology projects in USA and Canada





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PopClock

PROJECT BACKGROUND

In the past, trees had thousands of years to adapt to climate changes, but they now must respond to rapidly changing climatic conditions. With a grant from the National Science Foundation, a team of researchers at the University of Maryland Center for Environmental Science's Appalachian Laboratory are studying climate adaptation of forest trees. As part of this effort, they are comparing ground-based observations of spring leaf emergence and fall color change to satellite images, which they will use to create maps of "green-up" and "green-down" across large landscapes. They will combine these maps with genetic information to identify areas where trees are most and least adapted to climate change, which will serve as an important tool for forest management.



JOIN US!

We need observers in the U.S. and Canada to document changes in the growth of



HOW TO PARTICIPATE...

1. Select your plants. Identify one or more individual balsam poplar (*Populus balsamifera*) and quaking aspen (*Populus tremuloides*) stands or trees to track. Information for correctly identifying poplar species is provide at the end of this page.

Poplars tend to grow in clonal colonies, or stands (or patches) of individual trees sharing the same roots. Please make your observations at the scale of the entire stand (or patch), rather than an individual stem. When you register your plant in *Nature's Notebook*, check the box next to "Patch?" to indicate that you are reporting on the stand rather than an individual tree.

2. Create an account in *Nature's Notebook*. An email address and Internet access are all that are needed.

3. Observe your plant(s). For this project, we are especially interested in observations of two phenophases:

PHENOPHASE	DEFINITION
Leaves	One or more live, unfolded leaves are visible on the plant. A leaf is considered "unfolded" once its entire length has emerged from the breaking bud so that the leaf stalk (petiole) or leaf base is visible at its point of attachment to the stem. Do not include fully dried or dead leaves.
Colored leaves	One or more leaves (including any that have recently fallen from the plant) have turned to their late-season colors. Do not include fully dried or dead leaves that remain on the plant.

However, we welcome you to collect observations on other phenophases as well!



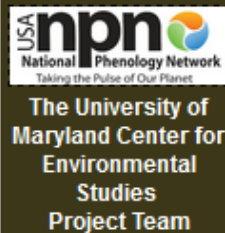
Example PopClock Newsletter



Partner Special Request - Observe Growth in Important Forest Species



Observations of poplars & aspens are fundamental to research at the University of Maryland



Dr. Stephen Keller



Dr. Andrew Elmore



Dr. Cat Stylinski



Greetings!

Looking for something fun to do in your yard as well as a way to contribute to science? Consider joining the [PopClock](#) project!



Researchers at the University of Maryland are looking for ground-based observations of spring leaf emergence and fall color change in balsam poplar (*Populus balsamifera*) and quaking aspen (*Populus tremuloides*). Your observations will be evaluated with satellite images and genetic information to create maps of "green-up" and "green-down" across large landscapes, which will help identify where trees are most and least adapted to climate change!

Here's how it works:

1. Identify one or more individual balsam poplar ([Populus balsamifera](#)) or quaking aspen ([Populus tremuloides](#)) stands or individual trees to track. We'd love to have you commit to participate for the three-year duration of the project, but any observations of these trees are welcome.
2. If you haven't already, [create an account](#) in Nature's

Dr. Matt Fitzpatrick



Dr. David Nelson



Please be sure to record the **absence** of leaves, by marking NO, as well as marking YES when you see emerging leaves. The NOs are important to capture because they help us zero in on when leaf-out truly begins in your neighborhood.

3. Watch your stands of trees carefully and document when leaf-out occurs. And remember: **be sure to record the absence of leaves**, by marking **no**, as well as marking **yes** when you see emerging leaves. The **nos** are important to capture because they help us zero in on when leaf-out truly begins in your neighborhood.

3. Submit your observations to [Nature's Notebook](#).

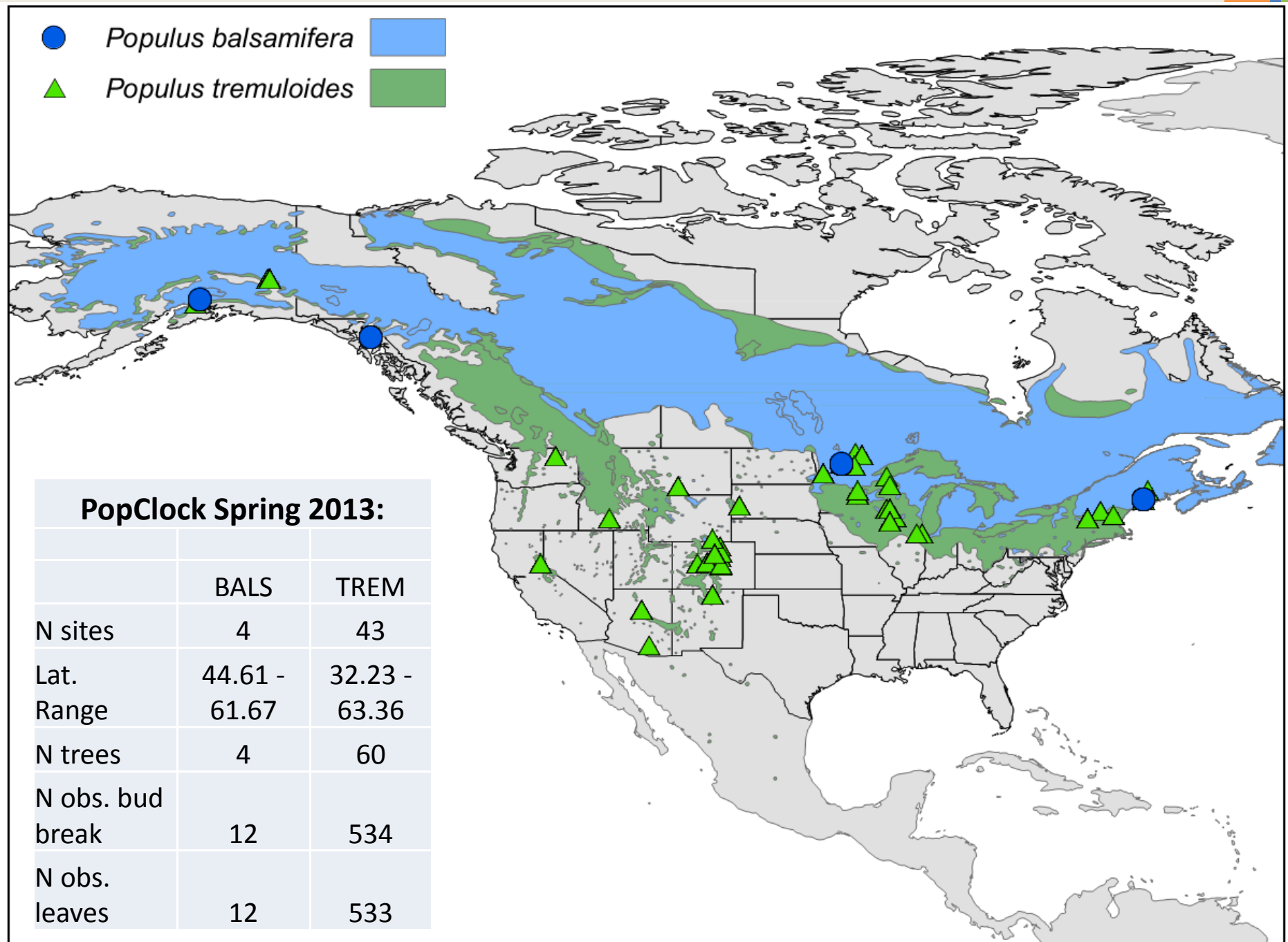
More information on this project and how to participate can be found on the [PopClock](#) page. We'll provide periodic updates on the project.

Thank you for considering helping out on this important project! Through this effort, you are contributing directly to scientific discovery and your participation is truly appreciated.

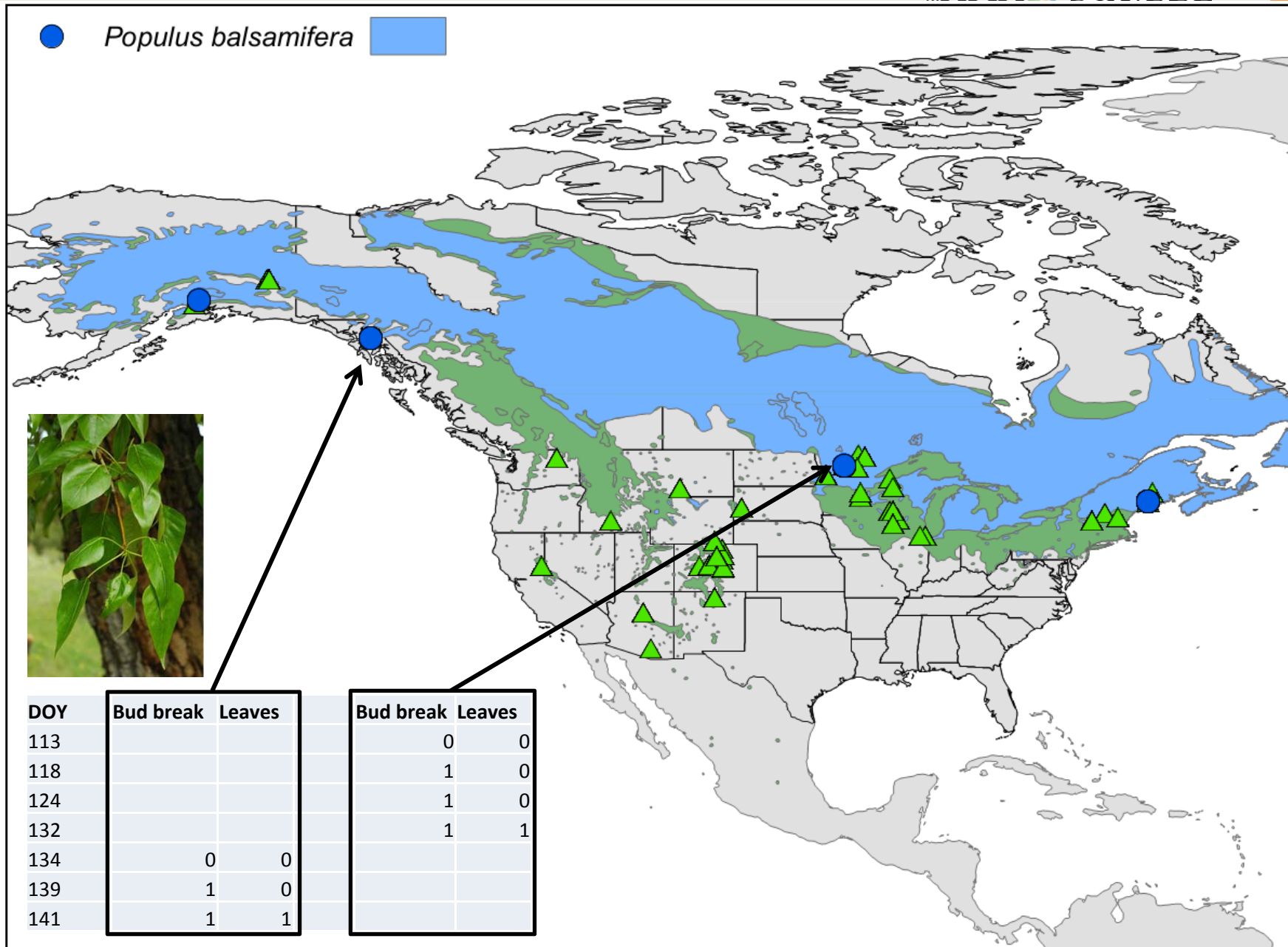


Canopies of aspen (left) and balsam poplar (right). Photo credit: E. Beaubien.

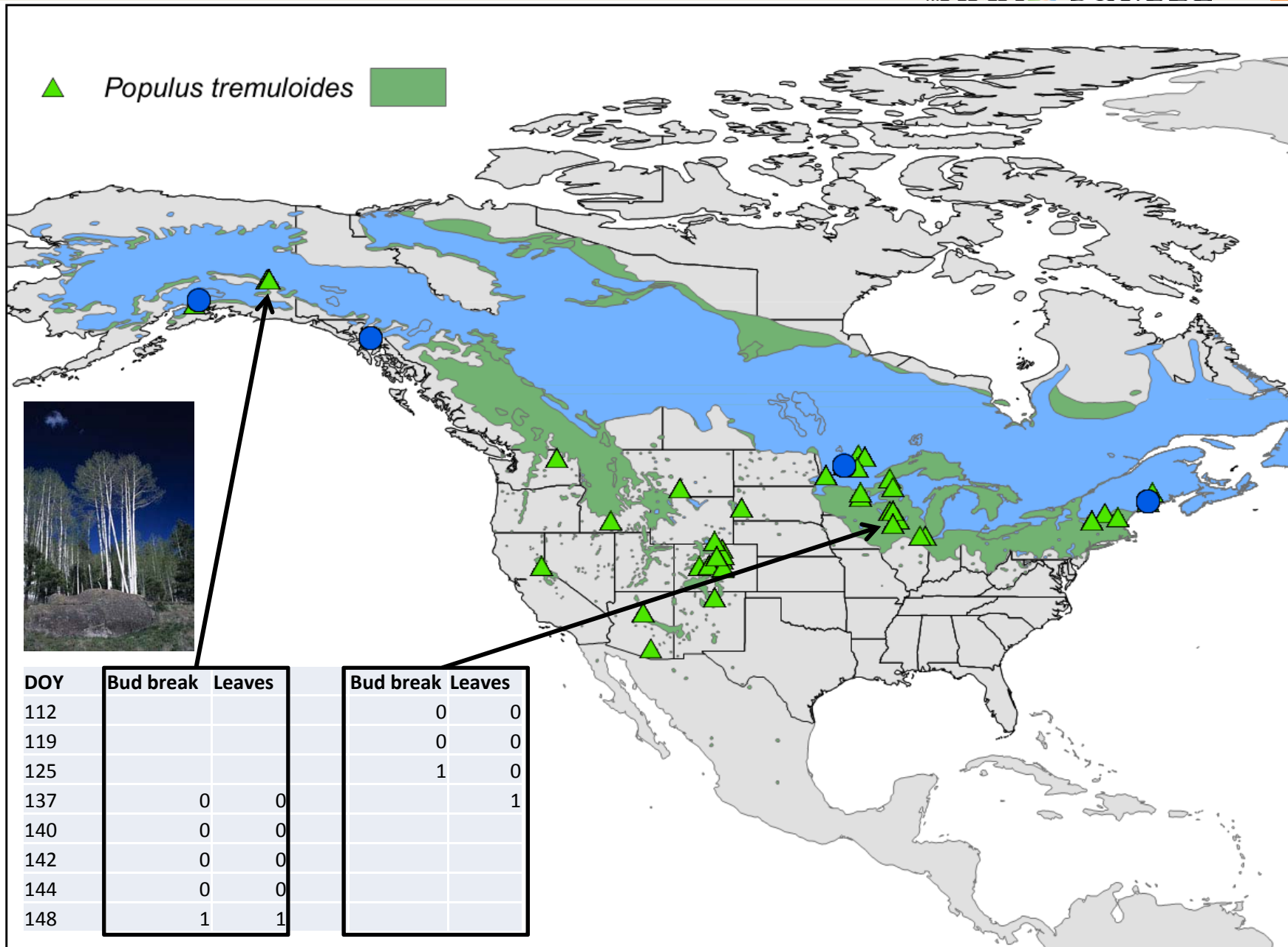
Sent April 23, 2013



Courtesy of S. Keller, University of Maryland Center for Environmental Science



Courtesy of S. Keller, University of Maryland Center for Environmental Science



Courtesy of S. Keller, University of Maryland Center for Environmental Science

Summary & Conclusions

- Project partner benefits
 - Data collection, management
- Participant benefits
 - Contributing directly to science
- USA-NPN benefits
 - Serving science community
 - Growing data resource



Thank you!

You're invited to connect with USA-NPN...

- Join the *Nature's Notebook* user community: **sign up for our quarterly Partners Newsletter**
- Become a *Nature's Notebook* observer: Contribute to science while having fun!
- Discover **new tools and resources** for work or play



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